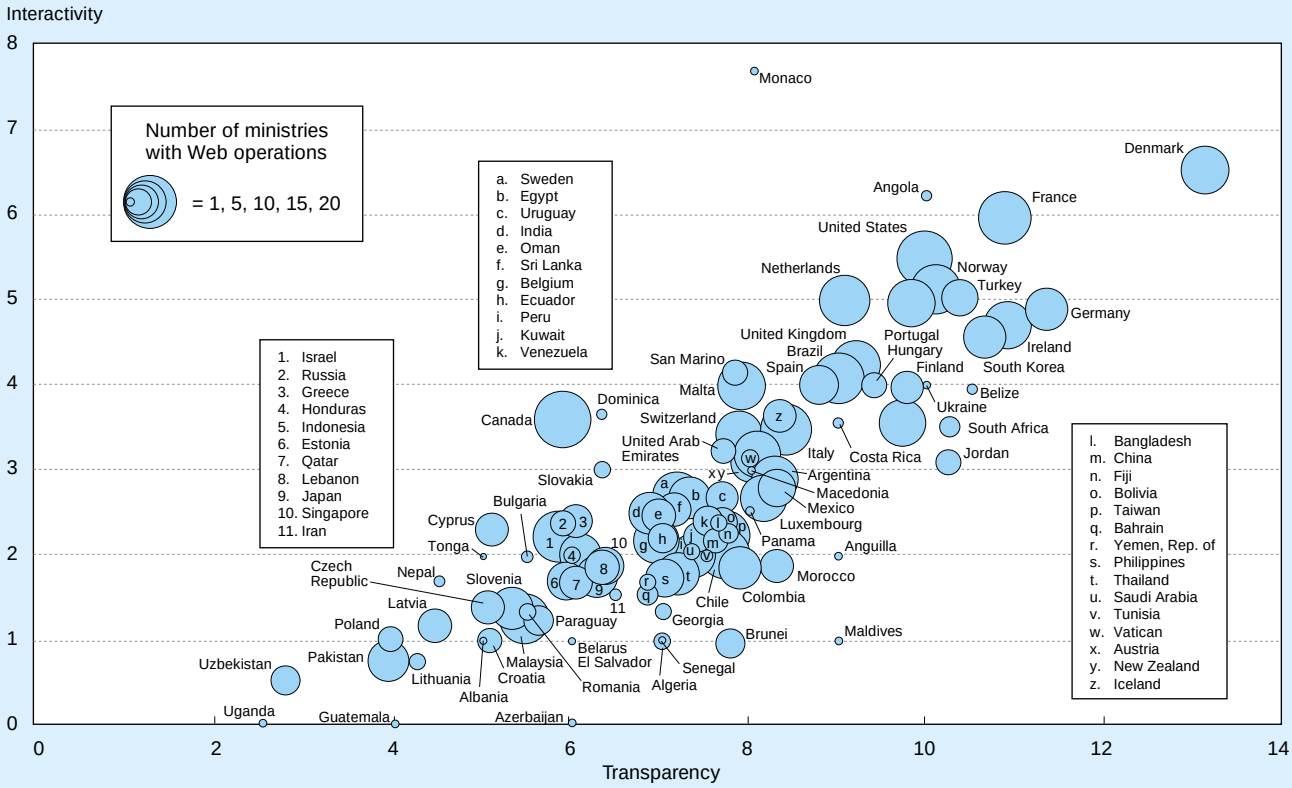
Figure 9-25.
Openness and its components: transparency, interactivity, and number of ministries



See appendix table 9-9.

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ered to use the Web to enhance the openness of government to a greater extent than countries in the lower left quadrant. A large number of national governments use the Web extensively. Almost 40 countries had Web sites for 70 percent or more of their agencies in 1998, and 17 countries had Web sites for all of their top-level agencies. (See appendix table 9-9.) There is also substantial variation in the measured transparency and interactivity of the countries, suggesting that countries vary in the extent to which they are currently taking advantage of the Web to interact with their citizens.

Conclusion

IT is having substantial effects on many domains of society, including the economy, education, research, and the home. In most areas, however, the effects of IT—and the choices that can be made to influence the effects—are not well understood. Moreover, significant new technologies are changing the nature of the effects as they are being researched. There is a large agenda for future research.

NSF sponsored a National Research Council (NRC) study of research needed on the economic and social effects of IT (CSTB 1998). Although the NRC panel did not attempt to provide a comprehensive research agenda, it highlighted an illustrative set of promising areas for research:

- **Interdisciplinary studies of information indicators.** Interdisciplinary study could help to identify and define a set of broadly accepted measures of access to, and the use and effect of, information and IT. (See sidebar, "Potential Information Technology Indices.")
- **Effects of IT on labor market structure.** To facilitate informed decisions on issues such as how to respond to increasing wage inequality, it is important to understand how and to what extent the use of computers might affect wage distribution.
- **IT, productivity, and its relationship to work practices and organizational structures.** Much evidence suggests that IT's effect on productivity depends on how it is used in organizations. Compilation of work that has already been done in this area is needed. Continued research also could illuminate how to better quantify the economic inputs and outputs associated with use of computers.
- **Intellectual property issues.** Policymakers considering revisions to intellectual property law or international agreements, as well as firms evaluating possible approaches to protecting intellectual property, would benefit from continued theoretical and empirical research.

♦ **Social issues addressed at the protocol level.** Widespread use of the Internet has far-reaching effects on intellectual property rights, privacy protection, and data filtering. Exploring how these concerns might be addressed at the protocol level—through policies, rules, and conventions for the exchange and use of information—could be a promising approach to addressing issues arising from the use of new computer and communications technology. Examples include the Platform for Internet Content Selection (PICS)—which implements a set of protocols for rating Web sites—and P3P, a project for specifying privacy practices.

The NRC panel also identified ways to improve the data needed to study the economic and social effects of IT, such as making data related to the social and economic effects of computing and communications available to the research community through a clearinghouse; exploring ways for researchers to obtain access to private-sector data; and establishing stronger ties with industry associations to facilitate collaborative research.

Potential Information Technology Indices

Interconnectivity index. This index would provide a measure of the facility of electronic communication and an evaluation of the development of this dimension of the information infrastructure.

Information quality of life index. Similar to an index produced by OECD, this index would attempt to evaluate the qualitative levels of communication available to individuals.

Leading information indicators. This index would attempt to predict the growth of the information infrastructure.

Home media index. This index of the state of penetration of communications technologies in the home might qualify as a leading index of the potential for future consumption of information.

Marginalization index. This index would measure the extent to which specific populations are excluded from participation in the information infrastructure.

SOURCE: CSTB (1998).

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